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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/441,657	11/16/1999	Yuta Miyagawa	44084-424	4746

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MCDERMOTT WILL & EMERY
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER

POON, KING Y

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 12/11/2003

10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/441,657

Applicant(s)

MIYAGAWA, YUTA

Examiner

King Y. Poon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-10 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 11-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 November 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. The amended title of invention has been accepted.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The change made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999

(AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b).

Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-3, 11-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujita et al. (US 5,872,587)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e).

This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR

1.132 that any invention disclosed but not claimed in the reference was derived from the inventor

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of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1: Fujita teaches an optical shutter drive device (fig. 12) comprising: an optical shutter module (light shutter array, column 9, lines 64-65) arraying a plurality of optical shutter elements (shutter elements, column 9, line 67, column 10, line 1) having an electro-optic effect (column 2, line 14); and a driver (driver IC, column 10, line 6) for modulating the ON time (column 10, lines 26-33) of each optical shutter element (column 10, lines 5-8) based on the image data (image data, column 10, lines 33-45); wherein the driver can modulate (modulating, column 10, line 28) each optical shutter element (fig. 13, fig. 14 showing how one particular shutter element is being turned on or off) at a gradient (e.g., area 1 is turned on all the time, fig. 13, and fig. 14, which corresponds to a gradient/tones of 32, column 10, line 36; or area 2, fig. 14, 15, is turned on with a tone of 16, column 12, line 36) corresponding to a predetermined number of bits, (there are 6 image bits to drive 6 time zones of a picture element, column 10, lines 33-40. The predetermined number of bits for each time zone is one (column 11, lines 34-36) and the maximum gradient corresponding to one bit is 32 which is located at area 1, fig. 13, fig. 14, and the minimum gradient corresponds to one bit is 1 which is located at area 6. The IC driver also drives the element to print at a gradient of 64 corresponds to all six image bits) so as to drive the each optical shutter element at a gradient (e.g., the gradient/tone of 48, 110000, fig. 14; column 11, lines 34-35 teaches each of the six bits of image data are set in either 1's or 0's) exceeding a maximum gradient (e.g., the maximum tone 32 at area 1; 48 exceed 32) at the

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predetermined number of bits (one bit) without turning OFF the optical shutter element (see the optical shutter is not being turned off when the gradient/tone exceeds 32. I.e., extended from area one into area two) when driving one line. (Column 11, line 14 and lines 20-23)

Regarding claim 2: Fujita teaches wherein the driver turns ON each optical shutter element with a dispersed timing. (See CL is being dispersed into AND gates (174) which drives individual shutter element, e.g., 162(1), 162(2) . . . , fig. 15)

Regarding claim 3: Fujita teaches wherein the predetermined number of bits (e.g., the one bit that drives area 1, fig. 13, fig 14) is fewer than the number of bits of the image data. (Six bits of image data, column 10, lines 34-35)

Regarding claim 11: Fujita teaches an electro-optic (column 2, line 14) element drive device (fig. 12) comprising: electro-optic elements (shutter elements, column 9, line 67, and column 10, line 11) having an electro-optic effect (column 2, line 14); and a driver (driver IC, column 10, lines 5-8) for modulating the ON time (column 10, lines 27-32) of the electro-optic elements based on the image data (column 10, lines 18-19) by a predetermined number of bits, (e.g., the ON/OFF time of the electro-optic elements are driven by one bit (predetermined number of bits) of image data of fig., 13, and fig. 14, column 11, lines 20-36; i.e., element 162 (1) is driven by one bit of image data and element 162(2) is driven by one bit of image data, fig. 15) and driving each of the electro-optic elements at a gradient (e.g., the electro-optic elements are driven at 48, 110000, fig. 14; column 11, lines 34-35 teaches each of the six bits of image data are set in either 1's or 0's) exceeding a maximum gradient (e.g., the maximum tone 32 at area 1; 48

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exceed 32) corresponding to the predetermined number of bits (1 bit in the example, see note) without turning off the electro-optic elements (see the optical shutter is not being turned off when the gradient/tone exceeds 32. I.e., extended from area one into area two) when driving one line. (Column 11, line 14 and lines 20-23)

Note: there are 6 image bits to drive 6 time zones of a picture element, column 10, lines 33-40. The predetermined number of bits for each time zone is one (column 11, lines 34-36) and the maximum gradient corresponding to the one bit is 32 which is located at area 1, fig. 13, fig. 14, and the minimum gradient corresponds to one bit is 1 which is located at area 6.

Regarding claim 12: Fujita teaches wherein the predetermined number of bits (e.g., the one bit that drives area 1, fig. 13, fig 14) is fewer than the number of bits of the image data. (Six bits of image data, column 10, lines 34-35).

Regarding claim 13: Fujita teaches wherein the electro-optic elements are an optical shutter. (Light shutter, column 9, lines 64-65).

Regarding claim 14: Fujita teaches, wherein the driver turns ON the each of the electro-optic elements with a dispersed timing. (See CL is being dispersed into AND gates (174) which drives individual shutter element, e.g., 162(1), 162(2) . . . , fig. 15)

Claim Rejections - 35 USC § 103

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being obvious over Fujita et al. as applied to claim 11 above and further in view of Pederson et al (US 3,938,144).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e).

This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at

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the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding claim 15: Fujita teaches a signal generation circuit (178, fig. 15) for providing a clock signal to synchronize image data shifting in a shift register, (column 12, lines 1-10), and a strobe signal for controlling the timing of a latching circuit to latch the image data in the shift register and for turning on each electro-optic element (the elements are driving at a gradient exceeding maximum gradient, see claim 11; when exceeding maximum gradient, the elements are turned on when the strobe signal is sent, column 12, lines 1-10).

Fujita does not teach a counter for counting standard clock signals, wherein the driver turns ON each electro-optic elements when count value of the counter reaches to the number corresponding to the image data.

However, Pederson, in the same area of sending shift pulses signal (column 25, line 3) to a shift register (column 25, line 4) for receiving and shifting data (column 25, line 5, fig. 10) and use a strobe signal (strobe pulse, column 25, lines 8-9) to control the timing of data in the shift register to be latched into a latching circuit (column 25, lines 10-11), teaches to use a counter (column 25, line 10) for counting standard clock signals (clock pulse, column 25, lines 60-68) and when the count value of the counter reaches a number (number 9, column 25, line 64), the counter sends out the strobe signal through gate 373 to the latch circuit for latching the data (column 25, lines 64-65, fig. 10).

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Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Fujita's signal generating circuit (178, fig. 15) to include: a counter for counting standard clock signals and when the count value of the counter reaches to the number (the number that corresponds to all the image data/data are in the shift register, see Pederson, column 25, lines 60-65) corresponding to the image data, generates a signal such that the strobe signal would be sent.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Fujita's signal generating circuit by the teaching of Pederson because of the following reasons: the strobe signal of Fujita cannot be sent at any time. For example, if the strobe signal is sent before all the image data bits are being shifted into the right position within the shift register, wrong image data is being latched and the printer would print garbage. Providing a counter for controlling the timing of sending the strobe signal would ensure image data are in the shift register before the strobe signal is sent. (Column 25, lines 60-66, Pederson)

Since the strobe signal, in Fujita, is used for controlling the timing of a latching circuit to latch the image data in the shift register and for turning on each electro-optic element after the image data has been latched; Fujita as modified by Pederson teaches a counter for counting standard clock signals, wherein the driver turns ON each electro-optic elements when count value of the counter reaches to the number (the number that corresponds to all the image data/data are in the shift register) corresponding to the image data.

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Allowable Subject Matter

6. Claims 4-10 are allowed.
7. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments filed on 8/14/2003 have been fully considered but they are not persuasive.

With respect to applicant's argument that Fujita does not teach driving the optical element at a gradient exceeding a maximum gradient corresponding to the predetermined number of bits without turning off the electro-optic elements when driving one line because Fujita turns off the shutter element six time per picture element printing time; has been considered.

In reply: Column 11, lines 30-50, teaches to turn on each area of fig. 13 and fig. 14 corresponds to the image data value. Image value of 48 is 11000. Each one bit of the 11000 controls an area. The maximum area that the one bit can control is 32 which is equal to a gradient of 32. When the element is driving 11000; fig. 13 and column 11, lines 40-50, shows that the element is no being turned off when the printing time of the element pass 32 (maximum gradient that a single bit can drive) because the element has been impressed with a driving voltage V_d .

(SPK)

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9. ACTION IS FINAL

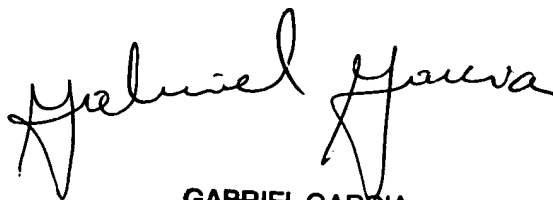
THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTHS shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to King Y. Poon whose telephone number is (703) 305-0892.

November 4, 2003


GABRIEL GARCIA
PRIMARY EXAMINER